

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

(DRAFT)

Title V, Construction/ Operating

Permit: V-06-029 R2

DART CONTAINER CORPORATION OF KENTUCKY

HORSE CAVE, KENTUCKY

MAY 19, 2008

LUIS D.FUENTES, REVIEWER

SOURCE ID: 21 -099 -00024

AGENCY INTEREST: 1774

ACTIVITY: APE20080001

SIGNIFICANT REVISION V-06-029 R2:

The current application was received on March 26, 2008 for adding an additional 800 horsepower boiler, emission Unit 21, with limited fuel oil usage of no more than 1,500,000 gallons per year in order to limit the total NOx potential to emit to less than 40 tons per year (tpy) on both of the new boilers. Updated DEP 7007A forms for hazardous air pollutants (HAP) emission calculation were received on April 11, 2008. The application also includes three insignificant activities to be added: Second zigzag printer; a second truck fueling station; and a printing on polypropylene.

SIGNIFICANT REVISION V-06-029 R1:

The application was received on October 3, 2007 for removing the applicability of 401 KAR 61:060, and the emission limit on the FoamPrint emission unit (EP 08). 401 KAR 61:060 is not applicable because none of the UV printers started operation prior to June 29, 1979. The permit also included the addition of a new 800 hp Steam Boiler, emission unit 19.

SOURCE PROCESS DESCRIPTION:

Dart Container Corporation of Kentucky ('Dart'), located in Horse Cave, Kentucky, produces a variety of food service containers including cups, containers, plates, lids, and utensils. Dart operates six different manufacturing processes on -site: expandable polystyrene container manufacturing; direct injection foam extrusion and thermoforming; impact extrusion and thermoforming; OPS extrusion and thermoforming; paper cup manufacturing, and cutlery injection molding.

Title V permit V-97-037 was issued to Dart on March 5, 1998 for the operations listed above. This permit was issued as a synthetic minor permit. Dart Container requested a source-wide VOC emissions limit of 240 TPY to preclude the applicability of to 401 KAR 51:017, Prevention of Significant Deterioration of the Air Quality (PSD). On April 26, 2001, permit V-97-037 R2 was issued to include a project, which was subject to PSD for increasing VOC emissions for direct injection (DI) foam manufacturing.

Dart submitted an application for renewal of its Title V Permit on August 28, 2002. The renewal permit V-06-029 was issued on April 6, 2007.

EMISSION AND OPERATING CAPS DESCRIPTION:

The source is a major source pursuant to PSD regulation. Dart Container has an existing source - wide volatile organic compounds (VOC) emissions limit of 240 TPY to preclude the applicability of PSD on all the existing processes except for DI Foam manufacturing. Dart is subject to best available control technology (BACT) limits for the DI Foam manufacturing processes.

Sulfur dioxide (SO₂) emissions from emission units 19 and 21 (800 HP Steam Boilers) shall not exceed 36 TPY, to preclude applicability of 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. For compliance demonstration, see specific emission Units under Section B.

Nitrogen oxides (NO_x) emissions from emission units 19 and 21 (800 HP Steam Boilers) shall not exceed 36 TPY, to preclude applicability of 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. For compliance demonstration, see specific emission Units under Section B.

PERIODIC MONITORING:Emission units 01, 02, 03, 19, and 21 - Cleaver Brooks Steam Boilers

The permittee shall monitor and maintain records of the following information:

- a. The total monthly fuel usage rate (cubic feet per month or gallons per month) for each of the fuels listed herein.
- b. The total monthly hours of operation (hours operated per month) of the boilers.
- c. The sulfur content of each type of fuel burned. The sulfur content may be determined by fuel sampling and analysis or by fuel supplier certification.

Emission Unit 04 - Expandable Polystyrene (EPS) Container Manufacturing (Cup Molding Presses, Dumpsters, Blenders, Holding Tanks, Pre Expanders, Screeners, Storage Bags)

The permittee shall monitor and maintain records of the following parameters:

- a. The monthly throughput of EPS and the pentane concentration in EPS beads.
- b. The monthly amount of VOC (pentane) in tons, captured by the emissions capturing device. This shall be measured as proposed by the source using the Continuous Emission Monitor (CEM) data and a computer program.
- c. The flow rate and the pentane concentration in air into the Pentane Control System in order to determine lb/hr of pentane entering the boilers. The operation of Pentane Control System shall be monitored on an hourly basis to ensure that the system is working properly. The monitor to measure pentane concentration shall be calibrated and operated according to manufacturer's specifications.

Emission Unit 10 and 11 - DI Foam Extrusion lines with Laminators; Emission Unit 12 - Roll Storage; Emission Unit 13 - Thermoforming; Emission Unit 14 - Scrap Regrinding and Fluff Transfer; Emission Unit 15 - Reclaim Extruders

The permittee shall monitor and maintain records of the following parameters:

- a. The daily usage rate (tons/day) of polystyrene raw material (at emission Units 10 and 11), daily amount of isopentane charged (tons/day), and the daily amount of finished product (tons/day).
- b. The flow rate of the exhaust gases from the extrusion process, grinding process and the Reclaim Extruders into the RTO and the concentration of VOC's in the exhaust stream. A flow sensor shall be used to measure the flow rate and an infra -red sensor (IR sensor) shall be used to measure the concentration of the VOC's. A computer program shall be used to integrate the flow rate and the concentration data to calculate the daily mass of VOC's inputted into the RTO. The data recorded shall be kept available either in hard copy or computer readable form. The daily VOC captured data shall be used to calculate the combined daily mass VOC emissions (tons/day) calculated from the emission units 10 through 15.

Emission Unit 17 - Regenerative Thermal Oxidizer

The permittee shall monitor and maintain records of the following parameters:

- a. The firebox temperature shall be measured by means of a data -recording device. The monitor shall be installed in the firebox or in the ductwork immediately downstream of the firebox before any substantial heat exchange is encountered.
- b. The firebox temperature shall be recorded at least once every 15 minutes or shall be recorded in 15 -minute or more frequent block average values. The data recorded shall be kept available either in hard copy or computer readable form.

APPLICABLE REGULATIONS:

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

The Division for Air Quality (Division) has performed air dispersion model screening of potentially hazardous substances that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

The following is a summary of the potentially hazardous substances upon which screening was performed, the modeled worst case impacts, and the level of concern (LOC) that would have triggered additional review and/or more detailed modeling. Since only worst case screening modeling was performed, these results do not, nor are they intended to, portray actual risk.

Emission Unit	Description	Substance	Modeled Impact	Level of Concern
05	Thermoformer	Styrene	0.02 $\mu\text{gram}/\text{meter}^3$	1000 $\mu\text{gram}/\text{meter}^3$
06	OPS Extrusion Lines / OPS Thermoformer			
07	Recycle/ Reclaim Ext.			
010	DI Foam Production/ Laminating Extruder			
011	DI Foam Production/ Laminating Extruder			
015	Reclaim Extruders			

COMPLIANCE ASSURANCE MONITORING (CAM):

- a. The Compliance Assurance Monitoring (CAM) plan for the DI foam extrusion process is summarized below:

1. Description: Direct Injection foam extrusion process
2. Identification: Emission units 14, and 15.
3. Control device: Regenerative Thermal Oxidizer (RTO)

Monitoring Approach:

- A. Dart will monitor the average temperature in the combustion chamber of the RTO continuously.
- B. Dart will monitor the capture airflow rate continuously.
Note: Pitot tubes and mass flow meters are used to determine the capture air feed to the RTO unit.
- C. Dart will monitor the VOC concentration in the capture air continuously.
Note: An infrared sensor is used to determine the concentration in the capture air.

During the destruction source testing, the average temperature of the combustion temperature was determined to be 1500°F. All periods when the temperature falls below this level will be indicated on the Title V deviation reports. Dart will continuously monitor the combustion temperature, and record it on a chart recorder, to prove correct operation of the RTO. Two thermocouples inserted into either side of the combustion chamber are used to determine the average combustion temperature. At least once a year the thermocouples will be checked for accuracy and will be recalibrated or replaced if necessary.

- b. The CAM plan for the EPS Container Manufacturing Process is summarized below:

1. Description: Expandable Polystyrene container production/ bead handling/ preparation section.
2. Identification: Emission Unit 04
3. Control device: Steam Boilers (Post control) (emission units 01, 02, 03, or 19 or 21)

Monitoring Approach:

A. Dart will monitor concentrations of VOC in capture air.

Note: An infrared sensor is used to determine the concentration in the capture air.

B. Dart will monitor flow rate of capture air.

Note: Pitot tubes and mass flow meters are used to determine the volume of capture air feed to the steam boilers.

C. Dart will monitor flame in boilers – Emission Units 01, 02, 03, and 19 or 21.

c. Background/Rational for Performance Indicators:

Dart collects VOC emissions from the bead handling and the bead pre-expanders and vents the emissions directly to the boilers for thermal destruction. The VOC concentration and flow rate of the capture air is monitored so that the amount of emissions reduction can be calculated.

The capture air is only fed to operating boilers and the flow rate to the boilers is monitored to ensure a safe and efficient VOC capture. The boiler flame color is also monitored on a daily basis to ensure correct operation of the boilers and VOC thermal destruction. The safety vent valve position is monitored to ensure that the capture air is being directed to the boilers and not to the atmosphere. Dart has carried out emission testing to obtain the appropriate emission factor and has conducted a destruction test to determine the boiler destruction efficiency.

OPERATIONAL FLEXIBILITY:

None

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.